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IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF UTAH

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NCAP LICENSING, LLC., *et al.*,  
Plaintiffs,  
v.  
APPLE, INC.,  
Defendant.

**MEMORANDUM DECISION  
AND ORDER  
CONSTRUING DISPUTED  
CLAIM PHRASES**

Case No. 2:17-cv-00905

Howard C. Nielson, Jr.  
United States District Judge

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The plaintiffs in this patent infringement lawsuit are nCap Licensing, nCap Telecommunications, and nCap Medical (collectively “nCap”). The defendant is Apple, Inc. There are two patents involved in this litigation, both asserted by nCap: U.S. Patent Number 9,088,071 (the “’071 patent”) and U.S. Patent Number 9,954,276 (the “’276 patent”). Both patents are titled “Techniques for Conductive Particle Based Material Used for at Least One of Propagation, Emission and Absorption of Electromagnetic Radiation” and claim antenna systems made using conductive-particle-based materials. The two patents are related: the ’276 patent is a continuation of the ’071 patent, *see* Dkt. No. 244-2 at 2, and the specifications for the two patents appear to be largely identical. *Compare* Dkt. No. 244-3 at 4–23, *with* Dkt. No. 244-2 at 4–24.

The parties ask the court to construe two disputed phrases in the ’276 patent: “conductive substrate” and “coupler for at least one of electrically, capacitively, and inductively coupling to the radiating antenna element, and for electrically coupling to a feed line.” As explained below, the court’s construction of “conductive substrate” is “a surface of a conductive substance comprising at least the area to which the conductive-particle-based antenna is applied, whether or

not a non-conductive or semi-conductive coating is first applied to some or all of that surface.”

The court’s construction of “coupler for at least one of electrically, capacitively, and inductively coupling to the radiating antenna element, and for electrically coupling to a feed line” is “a component that connects a feed line to a radiating antenna element. This component must be electrically connected to the feed line, and must be electrically, capacitively, and/or inductively connected to the radiating antenna element.”

## I.

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtr’n Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). In construing patent claims, courts “look first to the language of the claims, followed by the language of the specification and prosecution history.” *Allergan Sales, LLC v. Sandoz, Inc.*, 935 F.3d 1370, 1374 (Fed. Cir. 2019). These sources are called the “intrinsic record.” *Phillips*, 415 F.3d at 1317. Although “evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises” can also be helpful, such “extrinsic evidence” is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Id.* at 1317 (internal quotation marks omitted).

Ultimately “there is no magic formula or catechism for conducting claim construction.” *Id.* at 1324. The court reviews the available sources to determine “what the inventors actually invented and intended to envelop with the claim.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). “The construction that stays true to the claim

language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Id.*; *accord Phillips*, 415 F.3d at 1316.

## II.

The phrase “conductive substrate” appears in asserted claims 1–11 of the ’276 patent. nCap asserts that no construction is necessary for this claim or, alternatively, that the claim should be defined to mean the “surface of a conductive substance.” Apple argues the claim should be defined as “the surface of a component that is a conductive substance.”

The court finds that construction is necessary for this phrase, because the parties “raise an actual dispute regarding the proper scope of these claims” and “the court, not the jury, must resolve that dispute.” *O2 Micro International Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008); *see also Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319–20 (Fed. Cir. 2016). For the following reasons, the court adopts nCap’s alternative definition, with the added clarification that the surface must “comprise at least the area to which the conductive-particle-based antenna is applied, whether or not a non-conductive or semi-conductive coating is first applied to some or all of that surface.”

As an initial matter, the court finds that a “substrate” is the “surface” of a substance. Both parties agree on this construction. *See* Dkt. No. 269-1 at 3. This definition is also supported by the specification, which states that “[t]he substrate may be the surface of at least one of a conductive, a non-conductive, or a semi-conductive substance.” Dkt. No 244-2 at 16 (5:63–65). This language from the specification also makes clear that a “conductive substrate” is the surface “of a conductive substance,” and the parties do not seriously contend otherwise.

The parties do dispute whether all of the “conductive substrate” or only part of that substrate must be the surface of a conductive substance, however. The court concludes that the

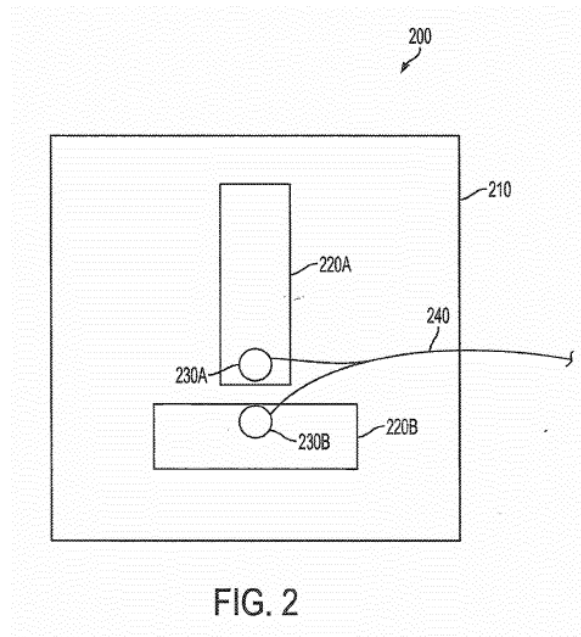
entire “conductive substrate” must be the surface of a conductive substance. The court believes that this is the most natural reading of the phrase “conductive substrate”—the phrase is not, after all, simply “substrate,” let alone “partly conductive substrate.”

This reading is also supported by comparing the relevant claim language from the ’276 patent, which requires “a conductive substrate,” with language from claim one of the ’071 patent, which requires that “a portion of the substrate onto which the conductive particle based material is applied directly is nonconductive, and another portion of the substrate onto which the conductive particle based material is applied directly is conductive.” Dkt. No. 244-3 at 23 (20:59–63). While the doctrine of claim differentiation may not literally apply here, given that the claims are from different patents, the court nevertheless finds the difference in claim language instructive, especially given the family relationship between the two patents. The precise language of the ’071 claim makes clear that had the inventors intended that only part of the “conductive substrate” required by the ’276 patent be the surface of a conductive substance, they knew how to say so.

It does not follow that the “conductive substrate” must comprise the entire surface of an object or component, as Apple appears to contend, but the court concludes that the conductive substrate must comprise at least that portion of the surface to which the conductive-particle-based antenna is applied. This interpretation is supported by the specification, which states that “[w]hen a conductive material is chosen as the substrate 210, an insulative coating of a non-conductive or semi-conductive material may be applied *to the area of the substrate 210 where the conductive particle based antenna 200 is to be applied.*” Dkt. No. 244-2 at 17 (8:14–18) (emphasis added). While this language suggests that the substrate may be larger than the area to which the conductive-particle-based antenna is applied, it makes clear that the substrate must

comprise at least that area. This interpretation is also supported by the '276 patent's Figure 2.

This figure shows antenna segments, 220A and 220B, overlying a substrate, 210. The substrate is larger than the antenna segments, but it clearly comprises at least the area where the antenna elements are located:



*Id.* at 5.

Finally, the court finds that the surface of a conductive substance is considered a “conductive substrate” even if a nonconductive or semi-conductive coating is applied to some or all of that surface. The patent specification teaches that “[t]he substrate may have a coating applied thereto” and that this “coating may be a conductive, non-conductive, or semi-conductive substance.” *Id.* at 16 (6:5–7). More specifically, as quoted above, the specification states that “[w]hen a conductive material is chosen as the substrate 210, an insulative coating of a non-conductive or semi-conductive material may be applied to the area of the substrate 210 where the conductive particle based antenna 200 is to be applied.” *Id.* at 17 (8:14–18). Nothing in the specification states or implies that when such a coating is applied, the surface of a conductive

substance no longer constitutes a “conductive substrate.” Indeed, although the specification clearly contemplates the possible application of a non-conductive or semi-conductive coating, each of the ’276 patent’s eleven claims requires a “conductive substrate.”

### III.

The phrase “coupler for at least one of electrically, capacitively, and inductively coupling to the radiating antenna element, and for electrically coupling to a feed line” appears in claim 2 of the ’276 patent. Dkt. No. 244-2 at 24 (22:5–7). nCap asserts that no construction is necessary for this claim but that if a construction is required, it should be “a component for at least one of electrically, capacitively, or inductively connecting to the radiating antenna element, and for electrically connecting to a feed line.” Dkt. No. 262 at 14. Apple argues that the claim should be construed as “a component used to transfer signals from a feed line to a radiating antenna element.” Dkt. No. 269-1 at 3.

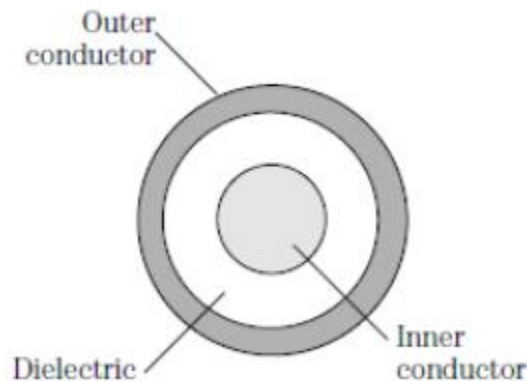
The court finds that construction is necessary for this phrase, because the parties again “raise an actual dispute regarding the proper scope of these claims.” *O2 Micro International*, 521 F.3d at 1360. The court construes this phrase as follows: “A component that connects a feed line to a radiating antenna element. The component must be electrically connected to the feed line, and must be electrically, capacitively, and/or inductively connected to the radiating antenna element.” The court believes this construction reflects the “ordinary and customary meaning” of the disputed language. *Phillips*, 415 F.3d at 1312 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

The court rejects Apple’s proposed functional construction. Apple argues that the coupler must be “used to transfer signals from a feed line to a radiating antenna element.” Dkt. No. 269-1 at 3. It appears that this construction would require that the coupler connect the signal portion of

the feed line to an active antenna element—a coupler connecting the ground portion of the feed line to a ground element would not fall within the relevant claim limitation if it were construed in this manner.

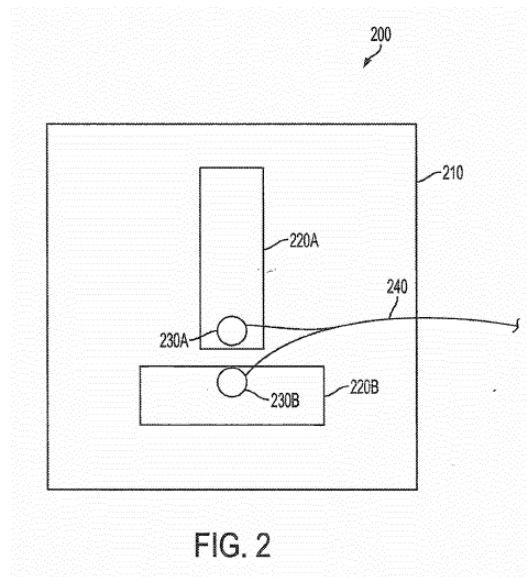
The Federal Circuit has made clear that “[w]here the function is not recited in the claim itself by the patentee, we do not import such a limitation.” *Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367; *see also Senju Pharm. Co. v. Lupin Ltd.*, 780 F.3d 1337, 1346 (Fed. Cir. 2015) (declining “to import [a functional] limitation” into claims that contained “no limitation denoting the function”). Apple’s proposed functional construction is thus proper only if it is supported by the language of the claims.

The fact that claim 2 requires that the coupler connect to “a feed line” does not support Apple’s proposed functional construction. As nCap explains without contradiction, a feed line “is typically a coaxial cable consisting of an inner metal wire (the ‘signal portion’ or ‘inner conductor’), insulating material (also referred to as ‘dielectric’), and an outer metal layer (the ‘ground portion’ or ‘outer conductor’).” Dkt. No. 253 at 7. nCap provides the following illustration:



*Id.* As nCap’s labels suggest, it is the “signal portion” that transfers signals.

Significantly, Figure 2 in the '276 patent specification shows the feed wire, 240, connecting to two couplers, 230A and 230B:



Dkt. No. 244-2 at 5. This figure does not differentiate between the two parts of the feed line. To the contrary, it clearly uses the phrase “feed line” to refer to the ground portion no less than the signal portion of that line. It is thus clear that the requirement that the coupler connect to a “feed line” does not support importing Apple’s proposed functional limitation into the disputed phrase.

Language in other claims—such as the limitation in claim three requiring that a “Radio-Frequency (RF) signal” be “input to the radiating antenna element,” and the limitation in claim eight requiring that “the radiating antenna element” be “fed a Radio Frequency (RF) signal”—also does not support Apple’s proposed functional construction given that (1) these limitations are not related to a “coupler” and (2) these limitations appear in different claims. Dkt. No. 244-2 at 24 (22:8–10; 27–28).

If Apple is correct that the phrase “radiating antenna element” means the active antenna element and not a ground element, *cf.* Dkt. No. 244-3 at 24 (21:18–19) (distinguishing “the radiating antenna element” from “a ground plane”), then this phrase may well support the

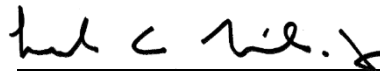


proposed functional limitation. But Apple has not asked the court to construe “radiating antenna element” in this manner. To the contrary, the parties have agreed that “radiating antenna element” means “an element of the antenna that transmits electromagnetic radiation.” Dkt. No. 269-1 at 2. And although there appears to be a factual dispute regarding whether a ground element transmits electromagnetic radiation, Apple has not asked the court to resolve this dispute at this time.

In short, if Apple is correct that a component connecting the ground portion of the feed line to a ground element is not a “coupler for at least one of electrically, capacitively, and inductively coupling to the radiating antenna element, and for electrically coupling to a feed line,” it is because a ground element is not a “radiating antenna element”—not because such a component is not a “coupler” or does not otherwise satisfy this limitation. The court will not read into this disputed limitation a functional meaning, not otherwise supported by the claim language, that allows Apple to circumvent the factual dispute regarding whether a ground element meets the construction of “radiating antenna element” to which the parties have agreed.

DATED this 22nd day of December, 2020.

BY THE COURT:

A handwritten signature in black ink, appearing to read 'H.C. Nielson, Jr.', is written over a horizontal line.

Howard C. Nielson, Jr.  
United States District Judge